ADCOMM ENGINEERING COMPANY
Communications Consulting Engineers

August 29, 2002

Mr. Kevin Kearns
King County Information and Telecommunications Services Division
700 5th Ave, #2300
Seattle, WA 98104

Dear Kevin:

Attached is a copy of the report that documents the results of the MTS2000 intermodulation performance testing.

Goal

The goal of this testing was to determine, using controlled and industry standard approaches, the intermodulation performance of the Motorola MTS2000 portable radios with both "C" and "D" version boards. In addition, the effectiveness of the Motorola modifications recommended in SRN1347 and of the "Portland" modifications were also evaluated. This testing did not cover any other portable radio or mobile radio. No performance assumptions should be made about any other manufacturer, model or revision levels of MTS radios from this testing.

Testing Process

The testing process is outlined in the attached report. It followed the recommendations of the Electronic Industries Association (EIA)/Telecommunications Industries Association (TIA) 603A specification except where noted in the test report. The basic EIA/TIA test set up and measurement approaches were used for all tests in order to provide test results that might match manufacturer's testing. One significant difference in the testing approach is the EIA/TIA specification only measures intermodulation performance at reference sensitivity which is essentially the specified sensitivity of the radio. Our testing was done at 3 dB and 1 dB intervals as described in the report in order to measure operational anomaly found. Another difference is the EIA/TIA specification uses 2A+B and 2A-B mixing frequencies for their testing. The intermodulation being experienced in the field is A+B-C. Our testing was done to reflect the situation encountered in the field while using an industry standard test bed. It is my professional opinion the basic EIA/TIA standard does not adequately define the performance of the radio in high RF fields. While some "estimate" of the performance may be made, the actual performance may not follow expected results.

In order to reduce radio to radio variability, the same two radios were used during the tests with the modifications installed in each radio as the tests progressed.

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Results

The testing clearly showed a non-linear (when graphed on a log scale) intermodulation response versus signal level in both the unmodified “C” and “D” version radios. The modification recommended by Motorola in SRN1347 and the Portland modification corrected this non-linear operation. When listening to the radio during these tests, the anomalous response would definitely result in reception difficulties in the field. When operating in this portion of the curve, the radio’s recovered audio could actually worsen even though the received signal strength is increasing.

Conclusion and Recommendation

All of the three modifications result in improved intermodulation performance when properly applied. There does not appear to be a significant difference between them. In addition, it is clear the EIA/TIA imtermodulation testing does not adequately test intermodulation performance in high RF environments. Based on this I recommend the following:

1. The MTS2000 portables should be modified per Motorola SRN1347. While the Portland modification requires the installation of fewer parts on the “D” series radios, there is some chance when these units are returned for warranty repair the modifications would be removed. In addition, since the Motorola modification has the same performance, there is less overall risk to abide by the manufacturer’s recommendation. I recommend a process be put in place to accomplish this as soon as possible as the improvement is significant.

2. Equipment recommend and supported by the King County Regional System should all be tested for intermodulation performance under high RF conditions. This testing could be done by the manufacturer and supplied to King County system managers as part of a purchasing agreement or the testing could be done independently of the manufacturer. It may not be possible to convince the manufacturer do this with equipment currently being purchased but it should be a requirement for any new models purchased.

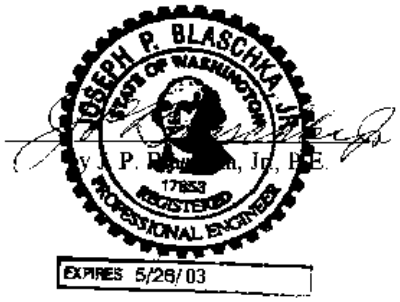
3. The King County regional system should consider approaching EIA/TIA to determine if the testing specifications could be changed and the process to accomplish the change.

Sincerely,

Joe P. Blaschka, Jr., P.E.
Adcomm Engineering Company

IM Bench Testing of MTS Board Revisions For King County Regional System

August 26, 2002



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IM Bench Testing of MTS Board Revisions
For King County Regional System

1. Introduction

1.1 Purpose

Determine the effectiveness of the Motorola SRN1347 modification on the MTS2000 radios in a lab environment, in the presence of strong IM producing in-band signals.

In response to the performance of the MTS2000 radios in the field, Motorola has issued SRN1347 to improve the IM performance in high RF fields. The SRN has two different approaches to fixing the problem depending on the version of the receiver circuit board. This SRN replaces a diode in the front end of the radio with a chip capacitor in the "C" version radios and changes some resistors in the AGC circuit and associated software in the "D" version of the board but leaves in the diode. The City of Portland in their field testing found the "D" version boards with the Motorola recommended change to be more affected by strong RF levels than the "C" version of the board with the recommended change.

In an effort to test the Motorola recommended modifications to the MTS 2000 radios, we propose testing the following radios:

C version Non-Modified
C version Modified
D version Non-Modified
D version Modified
D version Modified with C & D modification

2. Procedure

To maintain consistency throughout the testing, the same radio should be used for all tests whenever possible. It is recommended to test the Non-Modified radio first, then do the modification and test the same radio again. The combining network should be the same for all tests. Test equipment should be calibrated and verified to be within specifications. Record all Radio Serial Numbers, Part Numbers, and Board Revisions. The following should be performed on each of the five radios.

The TIA/EIA standards for testing Spurious Response (appendix A) and Intermod Rejection (appendix B), and Motorola Service and Repair Bulletin, SRN1347 (appendix C), are attached for reference.

1) **TIA/EIA-603-A 2.1.8 Spurious Response**: Follow the test procedure as outlined in TIA/EIA-603-A section 2.1.8 for Spurious Response. Baseline for Spurious response. Ensure that IM results are not skewed by Spurious Responses. The only frequencies in question for this test are within the Mobile Receive Band, so this test should be performed in the frequency range 851-869 MHz.

   Requirements:
   Equipment:
   Two Signal Generators, 2:1 combiner, Test Receiver, SINAD Meter, associated cabling.
   Miscellaneous:
   Manufacturer's specified limit for spurious response rejections in dB (SRR), lowest IF frequency, Method for testing SINAD on Test Receiver.

2) **TIA/EIA-603-A 2.1.9 with previous test frequencies**: Substitute the frequencies that are listed in the TIA document with the following frequencies, which were used during previous testing of Public Safety radios at the Nextel Test Bed in Kirkland, Washington (Totem Lake Facility, PANW-2). This will help to determine worst-case scenario IM products and allow us to compare the results of this

testing with the results of the previous test done at the Nextel Test Bed in Kirkland. Several points should be recorded to get an IM curve corresponding to the curves from previous testing. A minimum of 3dB steps should be used to acquire the general shape of the curve. For better detail, 1dB steps will be necessary where curves display anomalies.

Base Station Transmit Frequencies (MHz):	Test Mobile Receive Frequency (MHz):
859.0125	**858.6125**
859.2125	
859.6125	

INTERMODULATION PRODUCTS (MHz):

858.6125 = 859.2125 + 859.0125 - 859.6125

858.6125 = 3 * 859.0125 - 2 * 859.2125

Requirements:

Equipment:

Four Signal Generators, 4:1 combiner or equivalent, Test Receiver, SINAD Meter, associated cabling.

Miscellaneous:

Method for testing SINAD on Test Receiver

3) **TIA/EIA-603-A 2.1.9 with iDEN carriers**: Perform the same test as above, substituting iDEN base radios for RF Signal Generators. This will help to compare the affects of iDEN carriers with the baseline data.

Requirements:

Equipment:

Signal Generator, Three iDEN Signal Generators, 4:1 combiner or equivalent, Test Receiver, SINAD Meter, associated cabling.

Miscellaneous:

Method for testing SINAD on Test Receiver

4) **TIA/EIA-603-A 2.1.9**: Perform this test as documented. This will demonstrate if there are any differences between the results of the TIA/EIA recommended procedure and the procedures listed above.

Requirements:

Equipment:

Signal Generator, Three iDEN Signal Generators, 4:1 combiner or equivalent, Test Receiver, SINAD Meter, associated cabling.

Miscellaneous:

Method for testing SINAD on Test Receiver

3. Supporting Documentation

TIA/EIA-603-A (See Appendix A & B):

TIA/EIA Standard, "Land Mobile FM or PM Communications Equipment Measurement and Performance Standards

SRN 1347 (See Appendix C):

Motorola Service and Repair Bulletin, In-Band High Level Intermodulation Enhancement for MTS2000 800 MHz Radios

4. Results

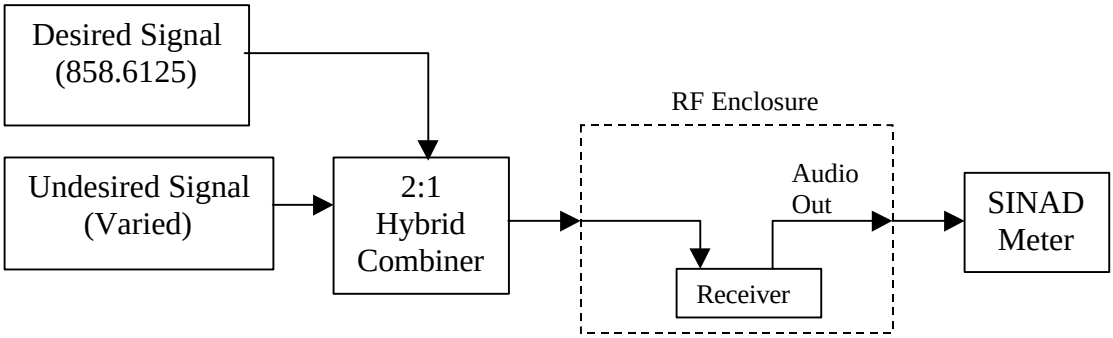
Testing was conducted on July 17 and July 18th, 2002 in the ATT Wireless Services testing facilities in Redmond Town Center, Redmond, Washington. Representatives of the City of Seattle, AT&T Wireless Services, and Nextel Communications provided assistance in the testing and analysis to ADCOMM Engineering.

The data from this test is recorded in the "MTS2000 Receiver Test Data.xls" file that is provided along with this document. Charts of these results are provided in the "MTS2000 Receiver Test Data.xls" file and in appendix D of this document.

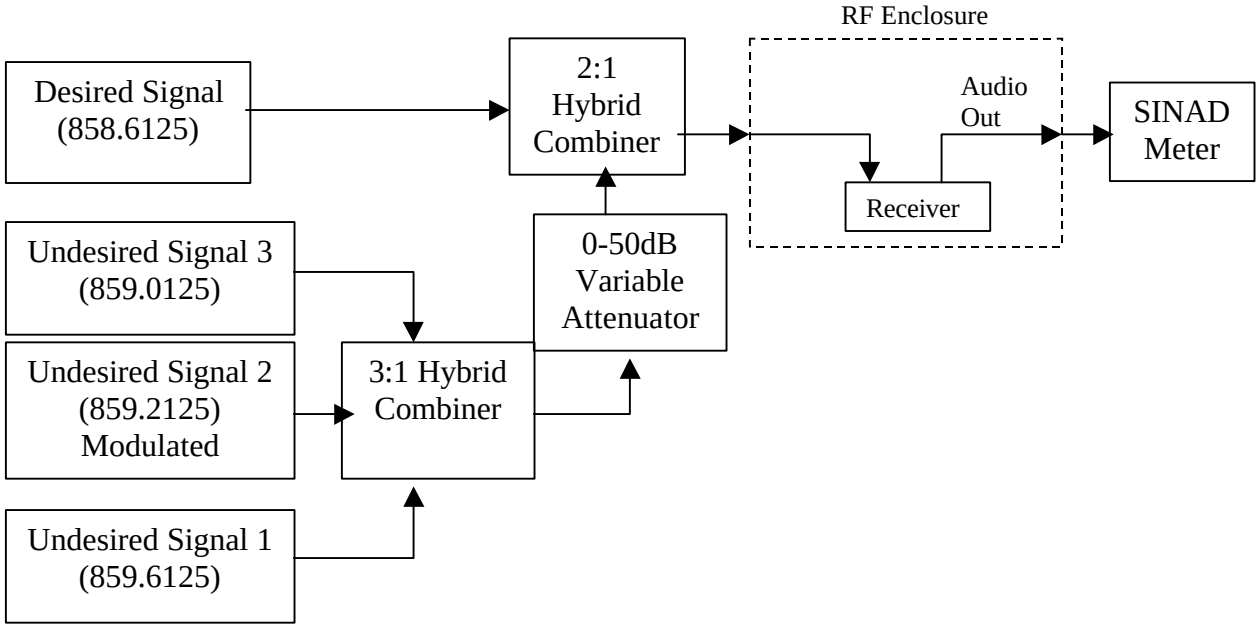
Test 1- Spurious Response for C version non-modified radio.
Setup as pictured below. Stepped through frequencies from 851-875 MHz in 12.5kHz steps. SINAD readings were monitored while stepping through. There was no significant degradation of SINAD except for right at the desired frequency (858.6125). This section of the testing took most of the morning to setup and conduct. Since there was no significant degradation in the SINAD, we decided not to do this test on every radio in order to concentrate our testing on IM performance.

Reference Sensitivity: Pref = -115dBm
SRR = -70
Pu = -115 + 70dB +6 = -39dBm

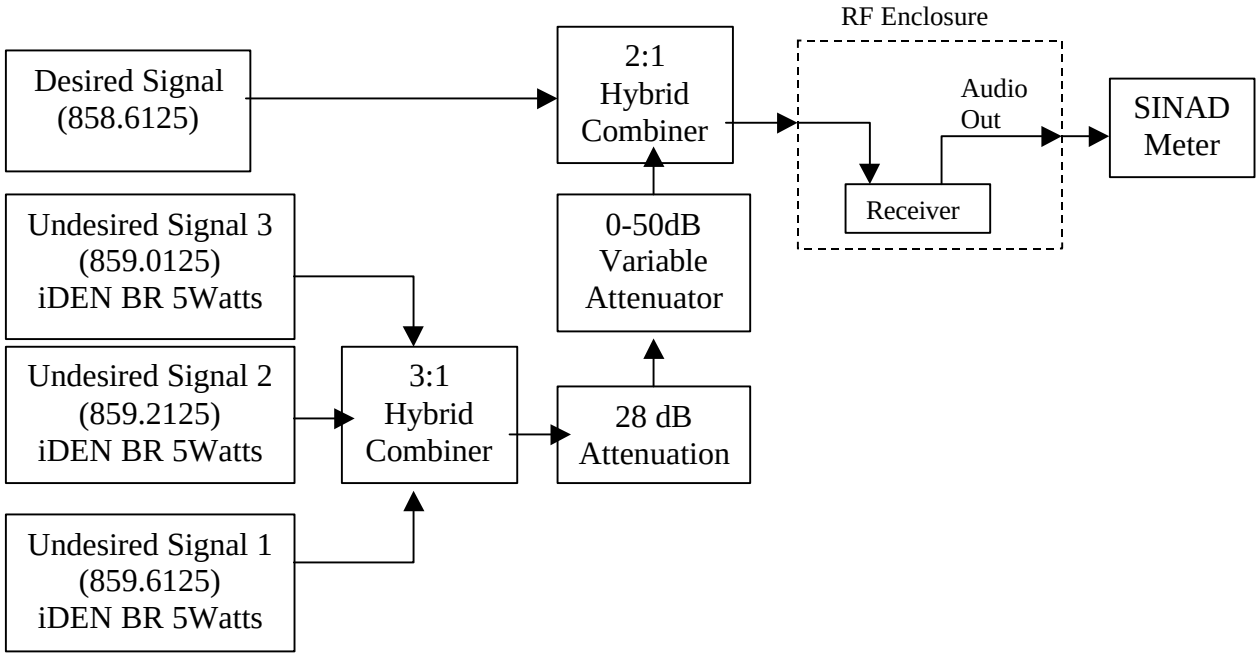
Test 1a - Image Rejection Frequency.
This test was conducted after completing Test 1. This is the desired frequency minus the lowest IF (858.6125 –73.35 MHz = 785.2625). This test used the same setup as Test 1. Adjusted the power from –39dBm to –4 dBm to determine if the SINAD would degrade. No significant degradation in SINAD.



Test 2- Intermodulation Response for C version (non-modified) with Signal Generator.
Setup as pictured below. Losses were verified for each transmit path and an average value recorded in spreadsheet. Reference sensitivity was determined and recorded in spreadsheet. Increased desired signal from reference sensitivity in 3dB steps, then adjusted undesired signals to achieve 12dB SINAD. These values were recorded in spreadsheet and plotted on chart to graph curves of IM rejection. In some cases, increasing desired signal had corresponding decrease in unwanted signal, creating an "S" shape in the graph. Anomalous operation near "S" in curve was observed. Results were recorded in spreadsheet tab MTS2000_C_SG.



Test 3- Intermodulation Response for C version (non-modified) with iDEN Carriers.
Setup as pictured below. Losses were verified for each transmit path and an average value recorded in spreadsheet. Reference sensitivity determined and recorded in spreadsheet. Varied attenuation on undesired signal from 50dB to 0dB in 3dB steps. After each step, the desired signal was adjusted until 12dB SINAD was achieved. These values were recorded in spreadsheet and plotted on chart to graph curves of IM rejection. Desired signal was easily adjustable, but iDEN BR transmit power is not easily adjustable. This is why the variable attenuator was used in this test. In some cases, 12dB SINAD was achieved at more than one signal level for a given attenuator setting, thus creating an "S" in the graph. For better resolution, the attenuation was adjusted by 1dB where the "S" was on the chart. Results were recorded in spreadsheet tab MTS2000_C_iDEN.



Test 4- IM response for D Version (non-modified) using iDEN carriers.
Same test as test 3 except with D version of radio (unmodified). Results were recorded in spreadsheet tab MTS2000_D_iDEN.

Test 5 – IM response for D version (non-modified) using signal generators.
Same test as test 2 except with D version of radio (unmodified). Results were recorded in spreadsheet tab MTS2000_D_SG.

Test 6 – IM response for modified C version using signal generators.
Same test as test 2 except with modified C version of radio. Results were recorded in spreadsheet tab MTS2000_C_SG (Modified).

Test 7 – IM response for modified C version using iDEN carriers.
Same test as test 3 except with modified C version of radio. There was a second point of where 12dB SINAD was achieved when undesired signal variable attenuator was set to 37dB. The point was near –98.5dBm desired signal. Could not get the SINAD to stay degraded. It was a blip on the SINAD meter. It would degrade for a split second and then recover immediately. Results were recorded in spreadsheet tab MTS2000_C_iDEN (Modified).

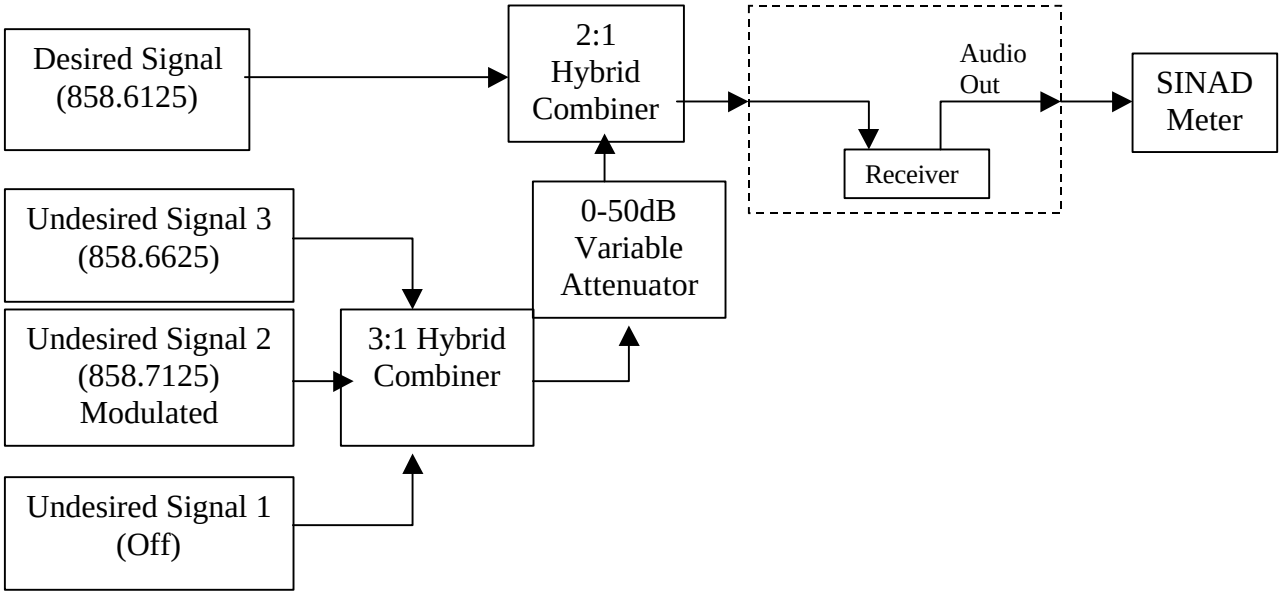
Test 8 – IM response for modified D version using iDEN carriers.
Same test as test 3 except with modified D version of radio. Results were recorded in spreadsheet tab MTS2000_D_iDEN (D Modified).

Test 9 – IM response for modified D version using signal generators.
Same test as test 2 except with modified D version of radio. Results were recorded in spreadsheet tab MTS2000_D_SG (D Modified).

Test 10 – IM response for modified D version with addition of C modification using signal generators.
Same test as test 2 except with D version of radio. Results were recorded in spreadsheet tab MTS2000_D_SG (C & D Mod).

Test 11 – IM response for modified D version with addition of C modification iDEN Carriers.
Same test as test 3 except with modified D version with addition of C modification. Results were recorded in spreadsheet tab MTS2000_D_iDEN (C & D Mod).

Test 12 – IM response for modified D version with addition of C modification using signal generators and TIA/EIA recommended freqs. Test setup as below. Procedure in TIA/EIA document was followed, collecting several points to create an IM curve. Results were recorded in spreadsheet tab MTS2000_D_SG (C & D Mod) TIA.



Calculation of Base Line

Each of the graphs includes a "Base Line" of the expected IM levels. This is a calculated IM curve using the MTS-2000 IM specifications. The desired signal was increased 3 dBm for each 1 dBm increase in the undesired signal.

5. Conclusions

1) All versions and revisions of non-modified RF boards in the MTS2000 family of 800 MHz radios have a portion of their IM curve that does not adhere to expected results.

2) All revisions of modified RF boards in the MTS2000 family of 800 MHz radios have IM curves that perform as expected. When in the presence of signals from –27 to –43 dBm, these modified RF boards will provide up to 20dB of addition IM rejection.

3) The IM curves for both non-modified and modified RF boards are independent of modulation type or frequency used to generate the undesired signal.

Notes:

D Modification: Changes resistor values
C Modification: Changes PIN diode and adds capacitor
D Modification with addition of C Modification: C & D- Change Resistor (D-Mod), and replace PIN diode with capacitor.
Specifics on MTS2000 "C" version used for testing:
SN- 466AAN5352Z
SW Version- 6.52
Specifics on MTS2000 "D" version used for testing:
SN- 466ABA4036
SW Version- 6.52

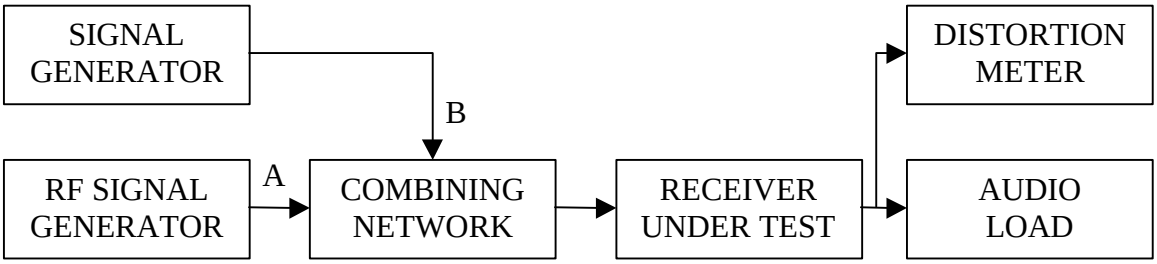
APPENDIX A
TIA/EIA-603-A

2.1.8 Spurious Response Rejection

2.1.8.1 Definition

The spurious rejection is the ability of a receiver to prevent single unwanted signals from causing degradation to the reception of a desired signal. It is expressed as the ratio of the level of a single unwanted input signal to the reference sensitivity. The unwanted signal is of an amplitude that causes the SINAD produced by a wanted signal 3dB in excess of the reference sensitivity to be degraded to the standard SINAD.

2.1.8.2 Method of Measurement



a) Connect the equipment as illustrated above. Connect a second radio frequency signal generator (unwanted signal source) to terminal B of the appropriate matching or combining network.

b) In the absence of the unwanted signal, apply the standard input signal to terminal A of the combining network. Reduce its level to obtain reference sensitivity. Record this level as P_{REF}.

c) Increase the level of wanted input signal by 3dB.

d) Apply an unwanted input signal, modulated with 400 Hz at 60 percent of the maximum permissible frequency deviation, to terminal B of the combining network. The level of this generator shall be adjusted according to the following:

Pu = Pref + SRR + 6dB

Where:

P_U is the level of the unwanted signal generator in dBm.
P_{REF} is the level of reference sensitivity in dBm.
SRR is the manufacturer specified limit for spurious response rejections in dB.

e) Vary the unwanted signal frequency over a range from one half of the lowest IF frequency in the receiver to twice the receiver frequency or 1000 MHz, whichever is greater, to search for degradation of the SINAD. Exclude the frequency band that is within +/- 100 kHz of the receiver frequency. When a response is found, adjust the frequency of the unwanted signal to maximize the degradation.

f) At the frequency of each spurious response, change the level of the unwanted input signal until the standard SINAD is obtained. Record the frequency of the unwanted signal and record its level as P_{SPUR}.

g) Calculate the spurious response rejection for each frequency concerned as follows:
Spurious response rejection = $P_{SPUR} - P_{REF}$.

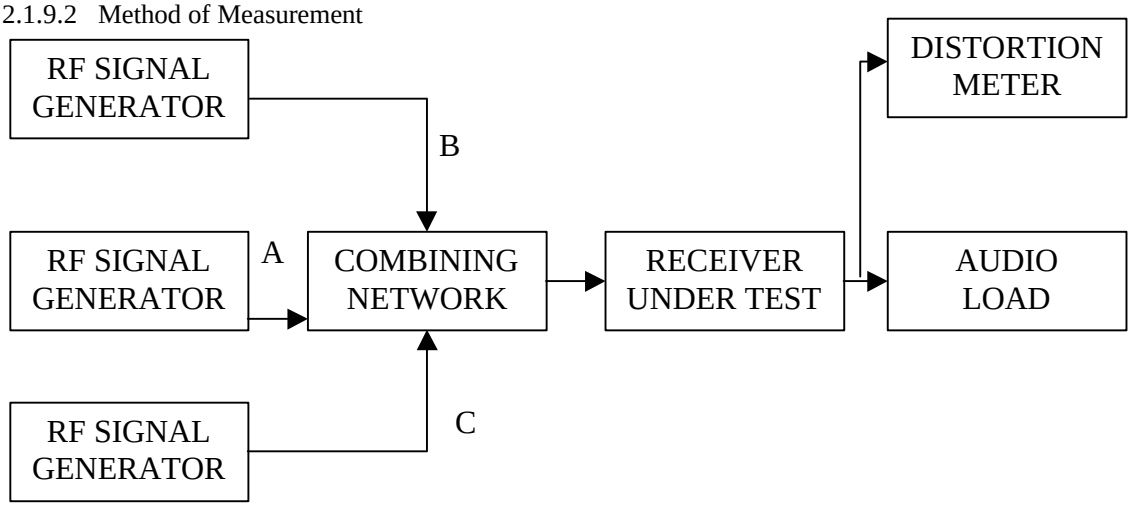
APPENDIX B
TIA/EIA-603-A

2.1.9 Intermodulation Rejection

2.1.9.1 Definition

The intermodulation rejection is the ability of a receiver to prevent two unwanted input signals, with a specific frequency relation to the wanted signal frequency, from causing degradation to the reception of a desired signal. It is expressed as the ratio of the level of two equal level unwanted signals to the reference sensitivity. The unwanted signals are of an amplitude that cause the SINAD produced by the wanted signal 3 dB in excess of the reference sensitivity to be degraded to the standard SINAD.

2.1.9.2 Method of Measurement



a) Connect the equipment as illustrated. Connect two additional signal generators (unwanted signal sources) to terminals B and C of an appropriate matching or combining network.

b) In the absence of the unwanted signals, apply the standard input signal at terminal A of the combining network and reduce its level to obtain reference sensitivity. Record the level P_{REF}.

c) Increase the level of the wanted input signal by 3dB.

d) Apply an unwanted, unmodulated input signal from the generator connected to terminal B. Adjust this generator frequency to the wanted frequency plus 50 kHz.

e) Apply an unwanted input signal modulated with 400 Hz at 60 percent rated system deviation from the generator connected to terminal C. Adjust this generator frequency to the wanted frequency plus 100 kHz.

f) Simultaneously increase the levels of the two unwanted signals until the SINAD is degraded.

g) Adjust the levels of the unwanted signals to be equal and to produce standard SINAD. Record this level as P_{HIGH}.

h) Repeat the above steps adjusting the frequency of the signal generator connected to terminal B to the wanted frequency minus 50 kHz, and the frequency of the signal generator connected to terminal C to the wanted frequency minus 100 kHz. Record this level as P_{LOW}.

i) Calculate the intermodulation rejection as follows:

Intermodulation rejection high = $P_{HIGH} - P_{REF}$

Intermodulation rejection low = $P_{LOW} - P_{REF}$

The smaller of the above is the intermodulation rejection.

APPENDIX C

SRN - 1347
APC - 432, 466
Sept 2001

Memo To: SRN Mailing List
Informational Only
From: MTS2000 Subscriber Product Group
Subject: **In-Band High Level Intermodulation Enhancement for MTS2000 800 MHz Radios**

Due to spectrum allocations that have placed commercial mobile radio service ("CMRS") providers in the same band as Public Safety systems, some 800 MHz Public Safety radios are experiencing interference in close proximity to CMRS sites. This interference can result in missed calls or unintelligible audio, even though the Public Safety receivers are operating in accordance with their published specifications.

Cause:
Intermodulation products of strong in-band signals (experienced close to CMRS sites) and the desired Public Safety signal may cause degraded receiver performance. APCO has published a "Best Practices" guide (available at http://apcointl.org/afc/800bpg.htm, then click on "Best Practices Guide") that suggests several approaches to this problem for new and existing systems (see Best Practices Guide, pages 11-14). If the problem cannot be resolved by the suggested methods, it is in some cases possible to improve the situation by modifying the Public Safety subscriber radios. This bulletin details modifications that can be made to the MTS2000 portable radio to improve its performance in high-level IM environments.

Affected Radios:
MTS2000 800 MHz band radios.
Model: H01UCx9PW1xN

Modifications: The service manual referenced in this procedure is part number 68P81200C75-O.

Part numbers are referenced below in table according to selected "Modification".

Summary Table	Serial Reference	Modification # 1	Modification # 2	Software	Q334
Radios Shipped before July 2000	432 or 466AAMxxxx and earlier	2113740A06		None Needed	
Radios Shipped from July 2000 thru October 00	432 or 466AANxxxx thru AAVxxxx		0662057A42 (R1) 0662057A73 (R5)	**Yes**	
Radios Shipped November 2000 & later	432 or 466AAWxxxx and later		0662057A42 (R1) 0662057A73 (R5)	None Needed	
Future MTS2000 Orders	Order No Charge Option	None Needed	None Needed	None Needed	**X**

Modification # 1 - NUF6500C and older PC board modification

1. Disassemble the radio in accordance with section 6 of the manual (pg. 29 – 33); kit number is located on the bar code label on the PCB as shown in Figure 1.
2. Remove Diode CR107 shown in Figure 1.
3. Place Capacitor part number 2113740A06 in place of the diode as shown in Figure 2. One end of the capacitor should bridge two of the diode pads.
4. Re-assemble the radio in accordance with section 6 of the manual (pg. 36 - 38).
5. Perform basic Sensitivity and power test to verify radio's basic functionality.
6. No firmware changes are required for this modification.
7. When NUF6500C and older PC boards are modified as described here, increased receiver Hum & Noise may be noticed in extremely strong signal strength areas (-15 dBm and stronger). This Hum & Noise will be audible, but will not result in missed calls or unintelligible audio.

Modification # 2 - NUF6500D PC board modification

1. Disassemble the radio in accordance with section 6 of the manual (pg. 29 – 33).
2. Replace resistor R1 with part number 0662057A42.
3. Remove resistor R3.
4. Place resistor R5, part number 0662057A73, in location shown in Figure 1.
5. Re-assemble the radio in accordance with section 6 of the manual (pg. 36 – 38).
6. If the **radio** contains **firmware older than R06.50**, upgrade the radio firmware to the latest release.
7. Perform basic Sensitivity and power test to verify radio's basic functionality

Future MTS2000 Orders with option Q334 – will receive board NUF6533X PC board

This board contains the enhancement as shipped from the factory.

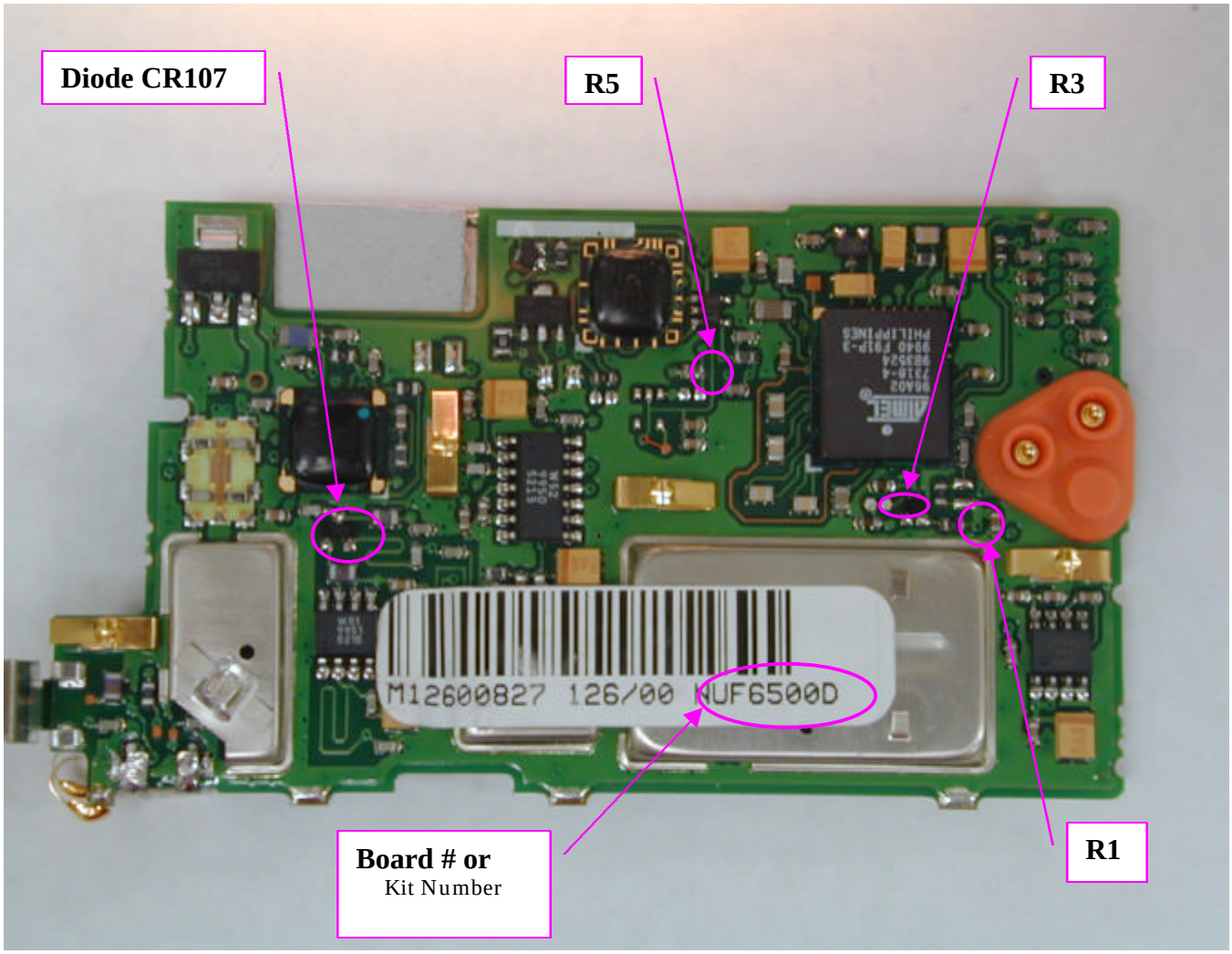


Figure 1 - Location of Components

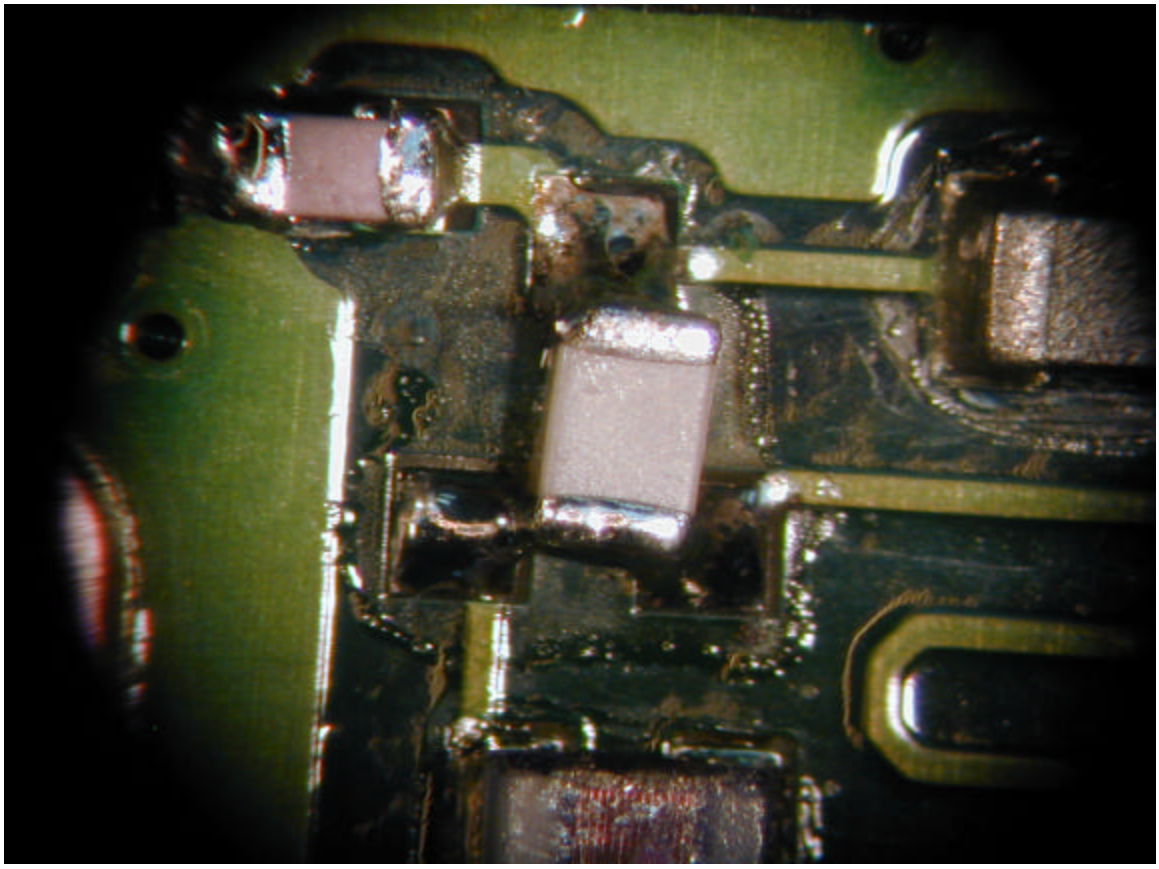


Figure 2 – Orientation of Capacitor part number 2113740A06

Note: ONLY the **Depot** or **other Factory Mutual Audited Service sites** can service **Intrinsically Safe FM Approved** radios.

Motorola Radio Service Center > 3761 S. Central Ave. Rockford, IL 61102	Contact CRC @ 1-800-227-6772 referencing SRN 1347: they will email or fax a copy of the Depot Service Request Form. **On form note special pricing** listed below.

A special program pricing has been established for customers when using the Motorola depot for this enhancement either for FM or NON-FM MTS2000 portables. Price per radio is * **$62 (includes shipping, parts and labor)**. * This price only applies to the work noted in modification described in this SRN. NO General Repair included **/ radio must be fully operational before modification can be made.**

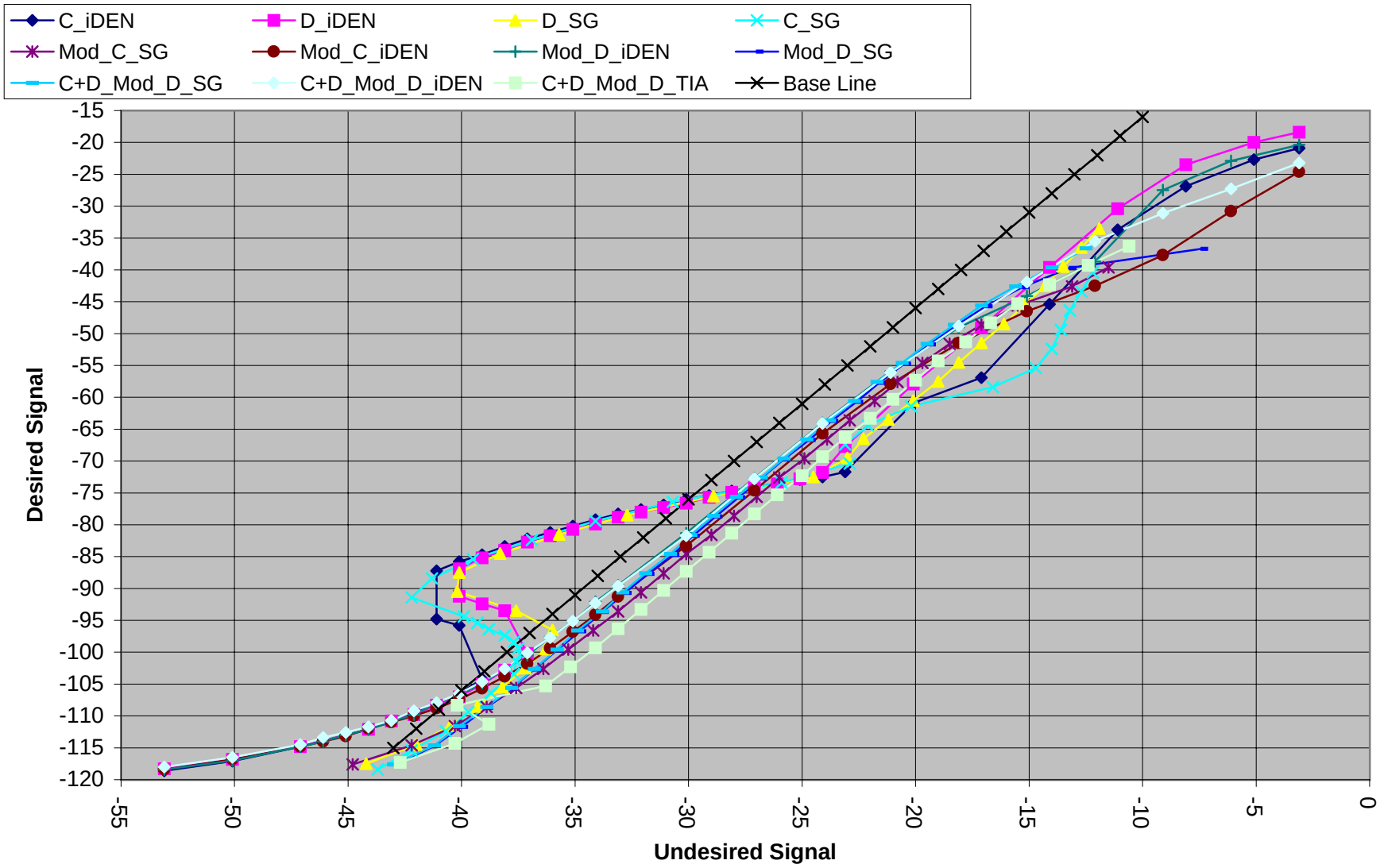
Ordering Information For Non-FM or Field Modifications:

When purchasing modification piece parts, contact (AAD) Aftermarket Accessory Division (800-422-4210)

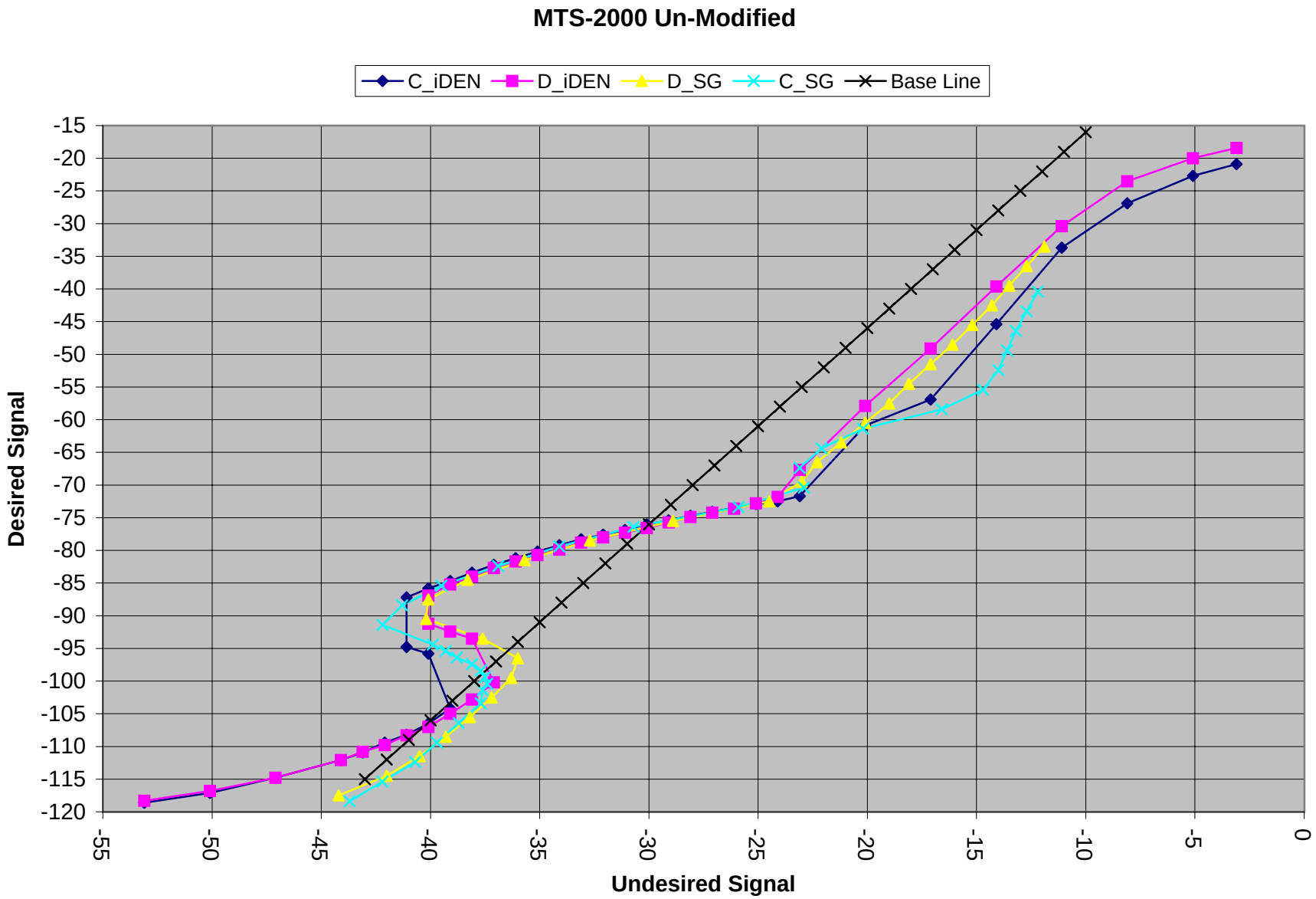
For radios shipped between **July 2000 and October 2000** you can register for this software by contacting the Florida Product group. Phone: 1-888-567-7347 / Prompts: 3-3-1

Informational ONLY, No Labor or Parts Warranty Implied.

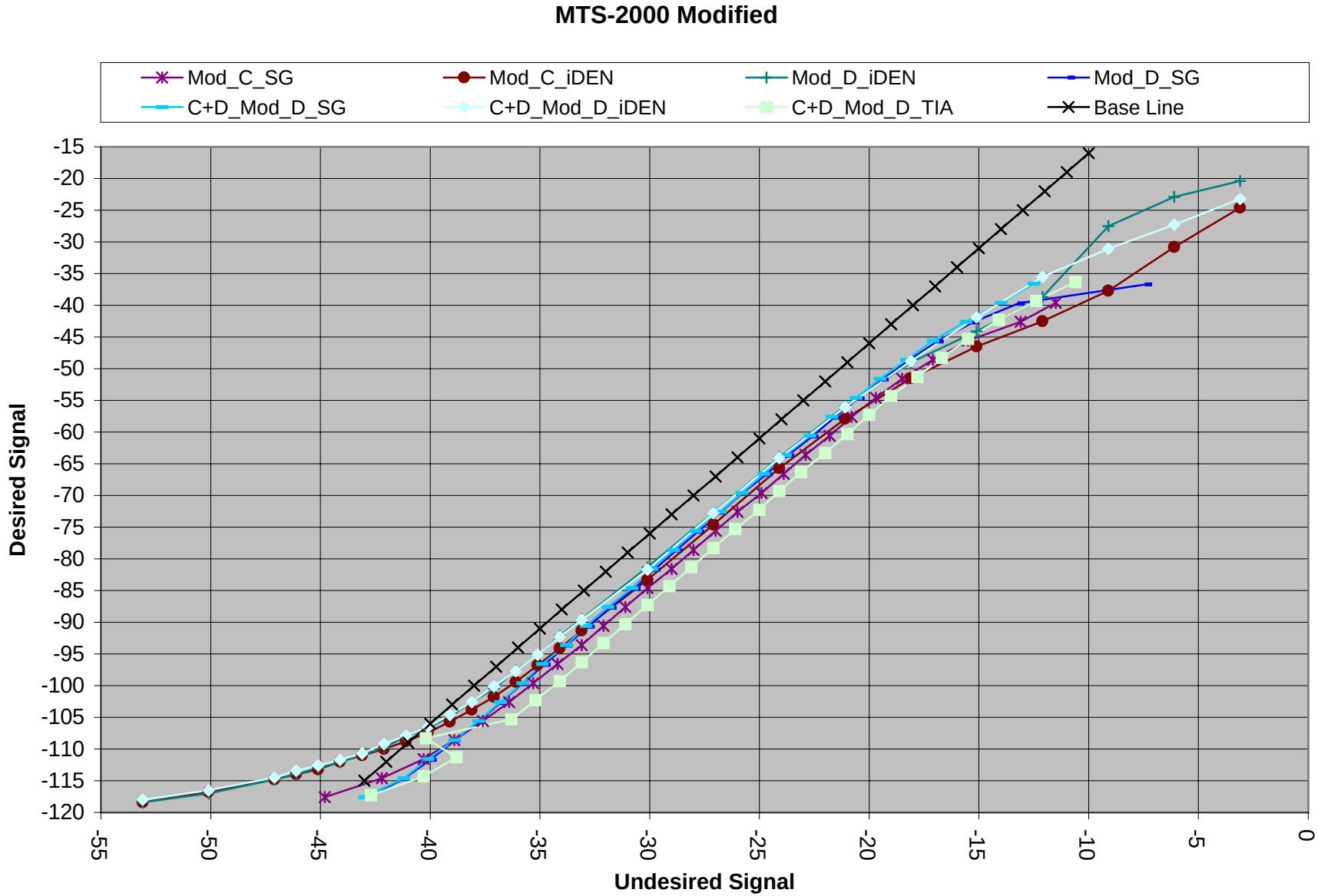
All Tests MTS-2000



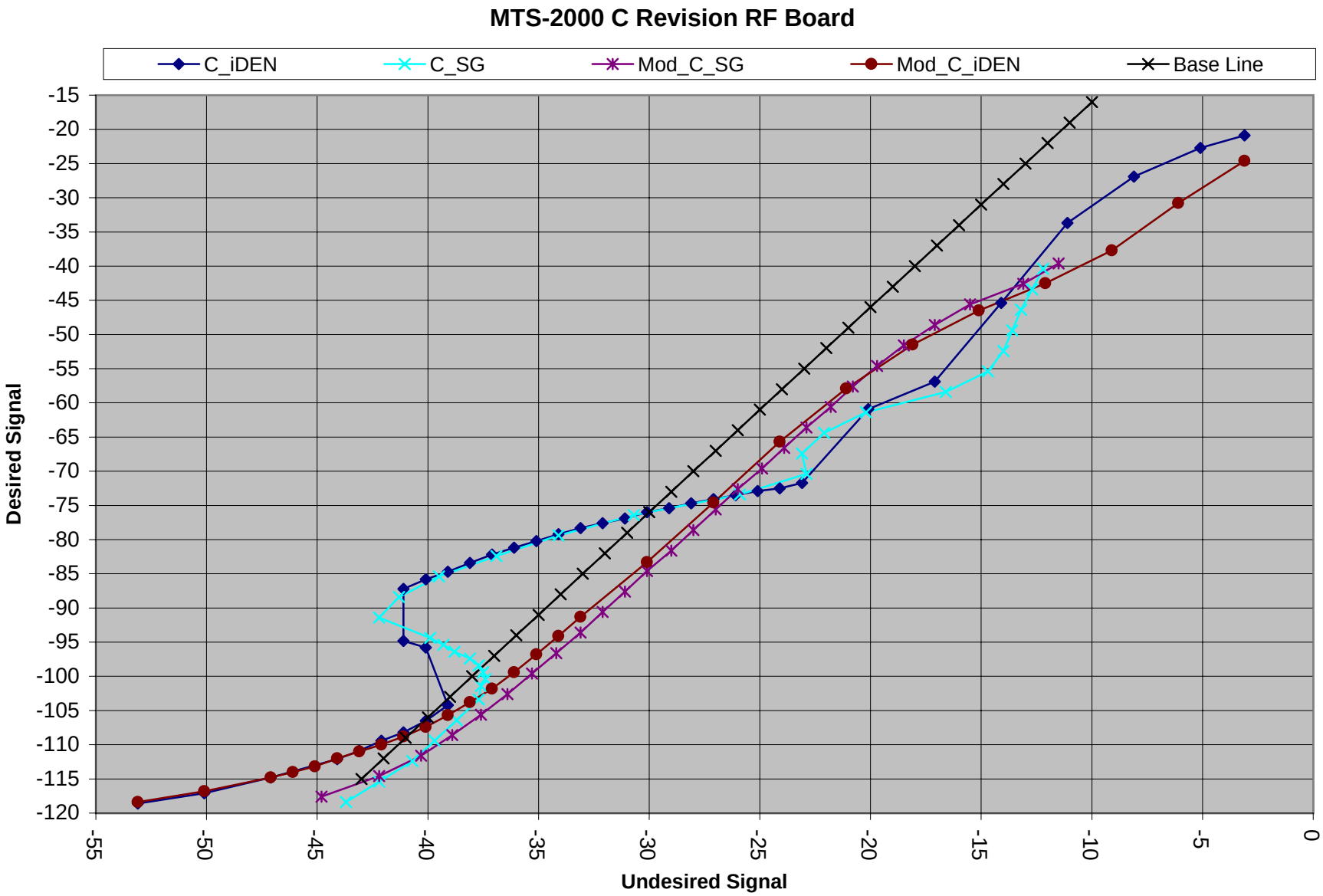
All Charts



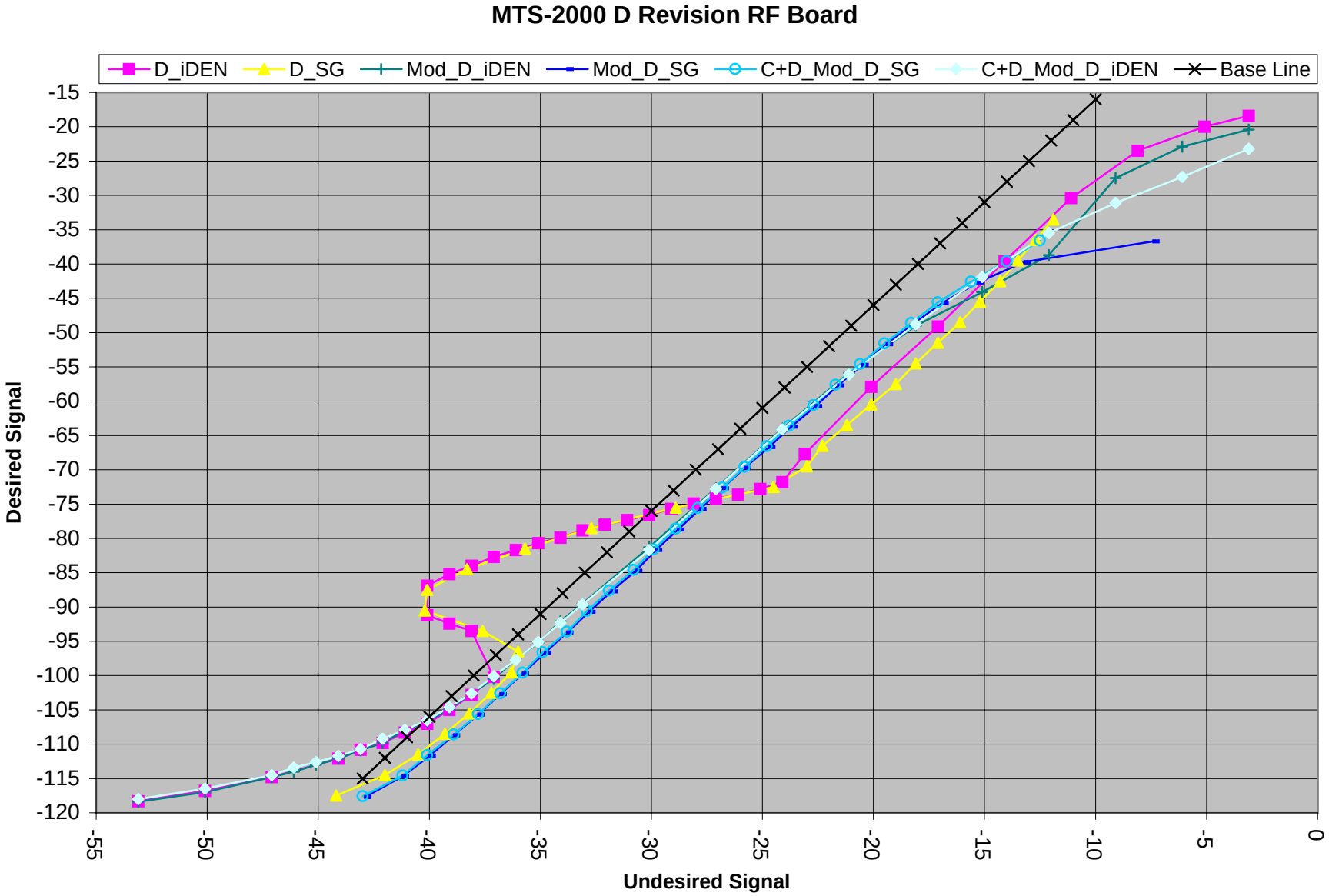
Un-Modified Chart



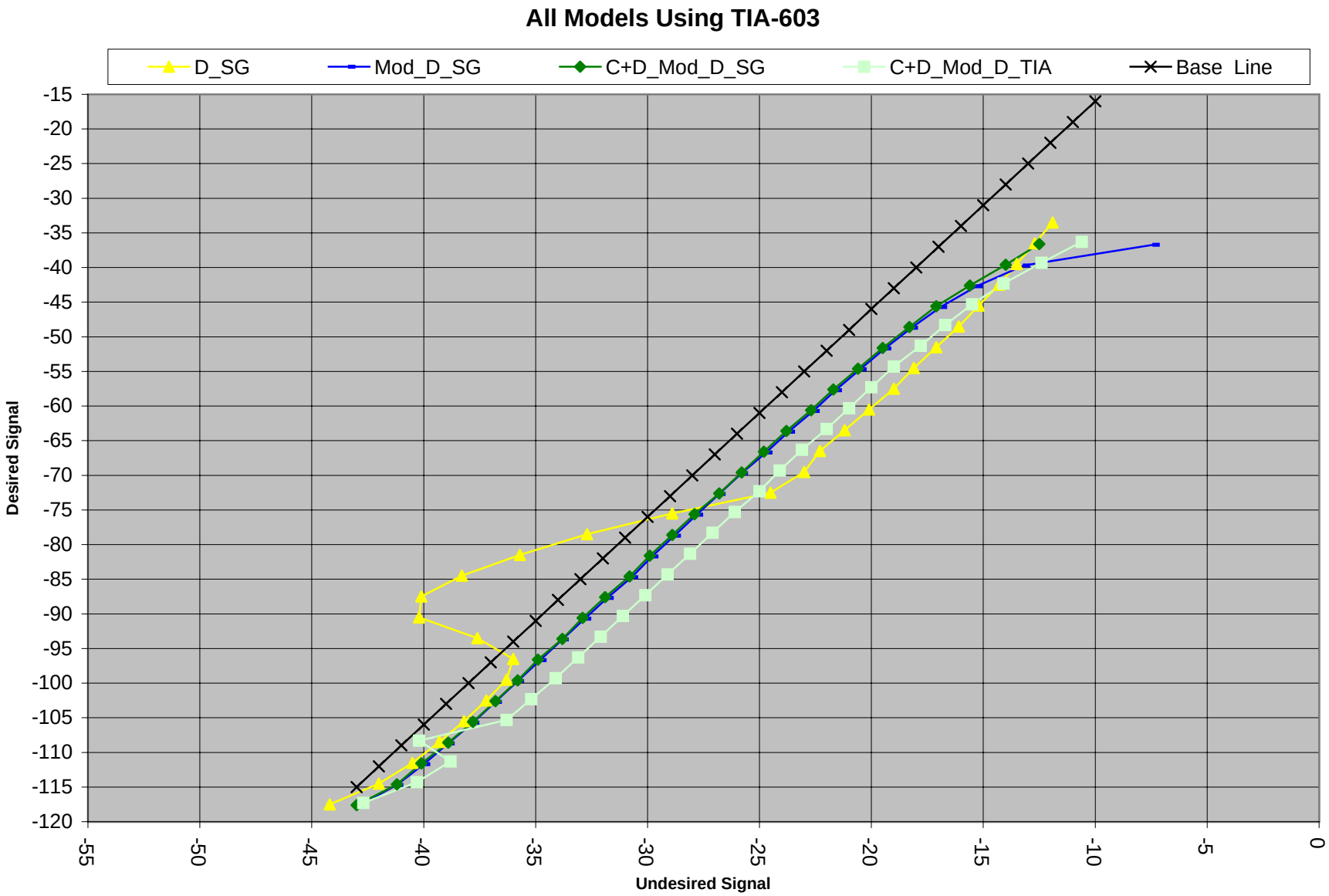
Modified Chart



C Revision Chart

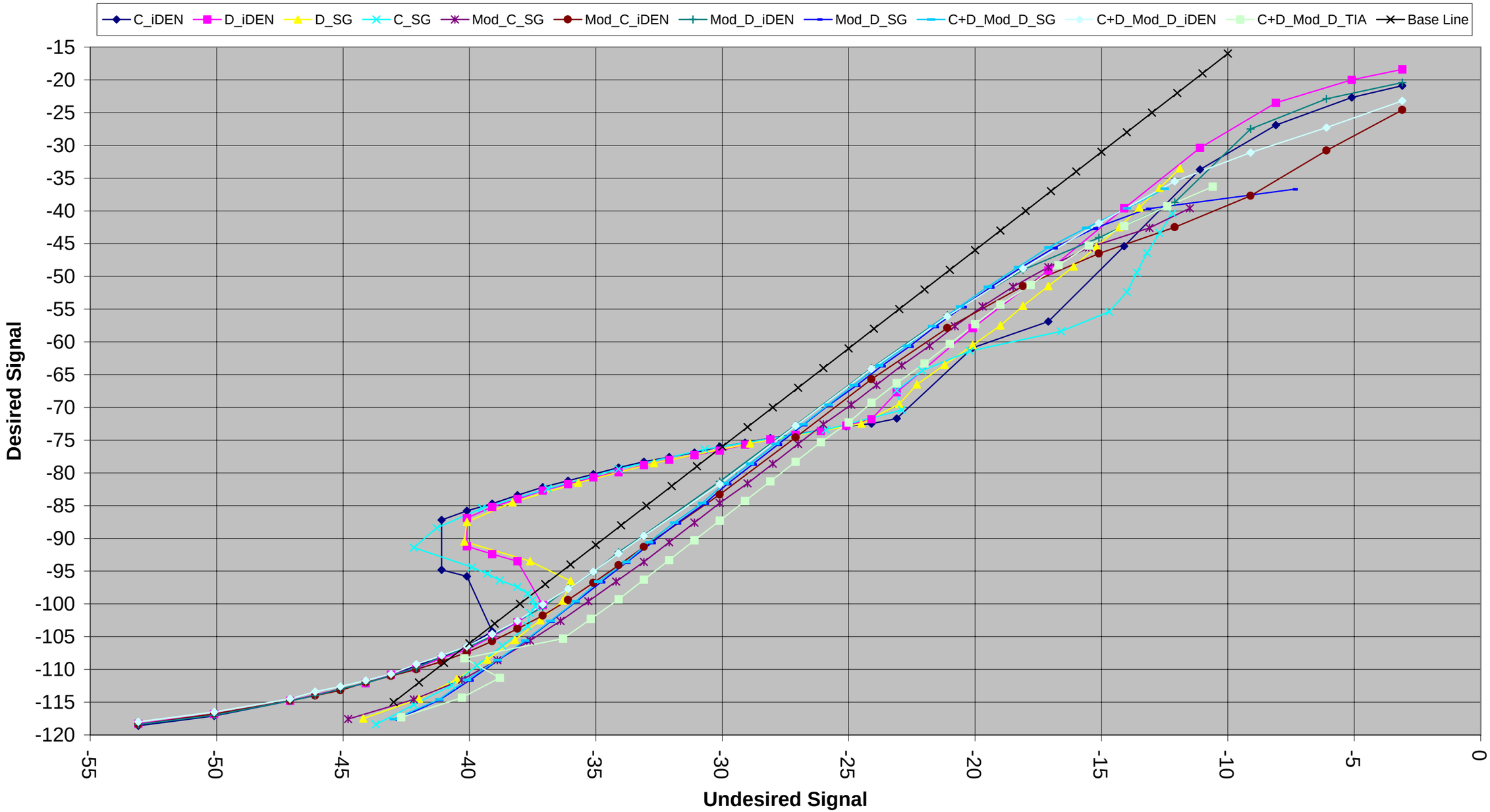


D Revision Chart


All Models Using TIA-603
D_SG
Mod_D_SG
C+D_Mod_D_SG
C+D_Mod_D_TIA
Base Line
Desired Signal
-15
-20
-25
-30
-35
-40
-45
-50
-55
-60
-65
-70
-75
-80
-85
-90
-95
-100
-105
-110
-115
-120
-55
-50
-45
-40
-35
-30
-25
-20
-15
-10
-5
0
Undesired Signal

TIA Chart

All Tests MTS-2000



All Charts 11x17

MTS2000_C (non-mod) Using Signal Generator

7/18/02

Desired Signal			Undesired Signal					
At Generator	Loss	At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-116.4	5	-121.4	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-113.4	5	-118.4	-32	0	11.7	-43.7	74.7	
-110.4	5	-115.4	-30.5	0	11.7	-42.2	73.2	
-107.4	5	-112.4	-29	0	11.7	-40.7	71.7	
-104.4	5	-109.4	-28	0	11.7	-39.7	69.7	
-101.4	5	-106.4	-27	0	11.7	-38.7	67.7	
-98.4	5	-103.4	-26	0	11.7	-37.7	65.7	
-96.4	5	-101.4	-25.9	0	11.7	-37.6	63.8	
-95.4	5	-100.4	-25.7	0	11.7	-37.4	63	
-94.4	5	-99.4	-25.8	0	11.7	-37.5	61.9	
-93.4	5	-98.4	-26	0	11.7	-37.7	60.7	
-92.4	5	-97.4	-26.4	0	11.7	-38.1	59.3	
-91.4	5	-96.4	-27.1	0	11.7	-38.8	57.6	
-90.4	5	-95.4	-27.6	0	11.7	-39.3	56.1	
-89.4	5	-94.4	-28.2	0	11.7	-39.9	54.5	
-86.4	5	-91.4	-30.5	0	11.7	-42.2	49.2	
-83.4	5	-88.4	-29.6	0	11.7	-41.3	47.1	
-80.4	5	-85.4	-27.8	0	11.7	-39.5	45.9	
-77.4	5	-82.4	-25.2	0	11.7	-36.9	45.5	
-74.4	5	-79.4	-22.4	0	11.7	-34.1	45.3	
-71.4	5	-76.4	-19	0	11.7	-30.7	45.7	
-68.4	5	-73.4	-14.2	0	11.7	-25.9	47.5	
-65.4	5	-70.4	-11.2	0	11.7	-22.9	47.5	
-62.4	5	-67.4	-11.4	0	11.7	-23.1	44.3	
-59.4	5	-64.4	-10.4	0	11.7	-22.1	42.3	
-56.4	5	-61.4	-8.5	0	11.7	-20.2	41.2	
-53.4	5	-58.4	-4.9	0	11.7	-16.6	41.8	
-50.4	5	-55.4	-3	0	11.7	-14.7	40.7	
-47.4	5	-52.4	-2.3	0	11.7	-14	38.4	
-44.4	5	-49.4	-1.9	0	11.7	-13.6	35.8	
-41.4	5	-46.4	-1.5	0	11.7	-13.2	33.2	
-38.4	5	-43.4	-1	0	11.7	-12.7	30.7	
-35.4	5	-40.4	-0.5	0	11.7	-12.2	28.2	

MTS2000_C (non-mod) Using iDEN BRs

PA	Variable Att	High Power Att	Loss	At Receiver
37	50	28	12.1	-53.1

7/18/02

Desired Signal			Undesired Signal					
At Generator	Loss	At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-116.8	5	-121.8	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-113.6	5	-118.6	37	50	40.1	-53.1	65.5	
-112.1	5	-117.1	37	47	40.1	-50.1	67	
-109.8	5	-114.8	37	44	40.1	-47.1	67.7	
-107.1	5	-112.1	37	41	40.1	-44.1	68	
-105.9	5	-110.9	37	40	40.1	-43.1	67.8	
-104.4	5	-109.4	37	39	40.1	-42.1	67.3	
-103.2	5	-108.2	37	38	40.1	-41.1	67.1	three levels…-103.2,-89.8 & -82.2
-101.5	5	-106.5	37	37	40.1	-40.1	66.4	
-99.2	5	-104.2	37	36	40.1	-39.1	65.1	
-90.8	5	-95.8	37	37	40.1	-40.1	55.7	
-89.8	5	-94.8	37	38	40.1	-41.1	53.7	
-82.2	5	-87.2	37	38	40.1	-41.1	46.1	
-80.8	5	-85.8	37	37	40.1	-40.1	45.7	
-79.7	5	-84.7	37	36	40.1	-39.1	45.6	
-78.4	5	-83.4	37	35	40.1	-38.1	45.3	
-77.2	5	-82.2	37	34	40.1	-37.1	45.1	
-76.2	5	-81.2	37	33	40.1	-36.1	45.1	
-75.2	5	-80.2	37	32	40.1	-35.1	45.1	
-74.2	5	-79.2	37	31	40.1	-34.1	45.1	
-73.3	5	-78.3	37	30	40.1	-33.1	45.2	
-72.6	5	-77.6	37	29	40.1	-32.1	45.5	
-71.9	5	-76.9	37	28	40.1	-31.1	45.8	
-71	5	-76	37	27	40.1	-30.1	45.9	
-70.4	5	-75.4	37	26	40.1	-29.1	46.3	
-69.7	5	-74.7	37	25	40.1	-28.1	46.6	
-69.1	5	-74.1	37	24	40.1	-27.1	47	
-68.5	5	-73.5	37	23	40.1	-26.1	47.4	
-67.9	5	-72.9	37	22	40.1	-25.1	47.8	
-67.5	5	-72.5	37	21	40.1	-24.1	48.4	
-66.7	5	-71.7	37	20	40.1	-23.1	48.6	
-55.9	5	-60.9	37	17	40.1	-20.1	40.8	
-51.9	5	-56.9	37	14	40.1	-17.1	39.8	
-40.4	5	-45.4	37	11	40.1	-14.1	31.3	
-28.7	5	-33.7	37	8	40.1	-11.1	22.6	
-21.9	5	-26.9	37	5	40.1	-8.1	18.8	
-17.7	5	-22.7	37	2	40.1	-5.1	17.6	
-15.9	5	-20.9	37	0	40.1	-3.1	17.8	

MTS2000_D (non-mod) Using iDEN BRs

PA	Variable Att	High Power Att	Loss	At Receiver
37	50	28	12.1	-53.1

7/18/02

Desired Signal			Undesired Signal					
At Generator	Loss	At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-115.6	5	-120.6	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-113.3	5	-118.3	37	50	40.1	-53.1	65.2	
-111.8	5	-116.8	37	47	40.1	-50.1	66.7	
-109.8	5	-114.8	37	44	40.1	-47.1	67.7	
-107.1	5	-112.1	37	41	40.1	-44.1	68	
-105.8	5	-110.8	37	40	40.1	-43.1	67.7	
-104.8	5	-109.8	37	39	40.1	-42.1	67.7	
-103.3	5	-108.3	37	38	40.1	-41.1	67.2	
-102	5	-107	37	37	40.1	-40.1	66.9	
-100	5	-105	37	36	40.1	-39.1	65.9	
-97.8	5	-102.8	37	35	40.1	-38.1	64.7	
-95.2	5	-100.2	37	34	40.1	-37.1	63.1	
-88.5	5	-93.5	37	35	40.1	-38.1	55.4	
-87.4	5	-92.4	37	36	40.1	-39.1	53.3	
-86.2	5	-91.2	37	37	40.1	-40.1	51.1	
-81.9	5	-86.9	37	37	40.1	-40.1	46.8	
-80.2	5	-85.2	37	36	40.1	-39.1	46.1	
-79	5	-84	37	35	40.1	-38.1	45.9	
-77.7	5	-82.7	37	34	40.1	-37.1	45.6	
-76.7	5	-81.7	37	33	40.1	-36.1	45.6	
-75.7	5	-80.7	37	32	40.1	-35.1	45.6	
-74.9	5	-79.9	37	31	40.1	-34.1	45.8	
-73.8	5	-78.8	37	30	40.1	-33.1	45.7	
-73	5	-78	37	29	40.1	-32.1	45.9	
-72.3	5	-77.3	37	28	40.1	-31.1	46.2	
-71.6	5	-76.6	37	27	40.1	-30.1	46.5	
-70.7	5	-75.7	37	26	40.1	-29.1	46.6	
-69.9	5	-74.9	37	25	40.1	-28.1	46.8	
-69.2	5	-74.2	37	24	40.1	-27.1	47.1	
-68.6	5	-73.6	37	23	40.1	-26.1	47.5	
-67.8	5	-72.8	37	22	40.1	-25.1	47.7	
-66.8	5	-71.8	37	21	40.1	-24.1	47.7	
-62.7	5	-67.7	37	20	40.1	-23.1	44.6	
-52.9	5	-57.9	37	17	40.1	-20.1	37.8	
-44.1	5	-49.1	37	14	40.1	-17.1	32	
-34.6	5	-39.6	37	11	40.1	-14.1	25.5	
-25.4	5	-30.4	37	8	40.1	-11.1	19.3	
-18.5	5	-23.5	37	5	40.1	-8.1	15.4	
-15	5	-20	37	2	40.1	-5.1	14.9	
-13.4	5	-18.4	37	0	40.1	-3.1	15.3	

MTS2000_D (non-mod) Using Signal Generator

PA	Variable Att	High Power Att	Loss	At Receiver
37	50	28	12.1	-53.1

7/18/02

Desired Signal			Undesired Signal					
At Generator	Loss	At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-115.5	5	-120.5	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-112.5	5	-117.5	-32.5	0	11.7	-44.2	73.3	
-109.5	5	-114.5	-30.3	0	11.7	-42	72.5	
-106.5	5	-111.5	-28.8	0	11.7	-40.5	71	
-103.5	5	-108.5	-27.6	0	11.7	-39.3	69.2	
-100.5	5	-105.5	-26.5	0	11.7	-38.2	67.3	
-97.5	5	-102.5	-25.5	0	11.7	-37.2	65.3	
-94.5	5	-99.5	-24.6	0	11.7	-36.3	63.2	
-91.5	5	-96.5	-24.3	0	11.7	-36	60.5	
-88.5	5	-93.5	-25.9	0	11.7	-37.6	55.9	
-85.5	5	-90.5	-28.5	0	11.7	-40.2	50.3	
-82.5	5	-87.5	-28.4	0	11.7	-40.1	47.4	
-79.5	5	-84.5	-26.6	0	11.7	-38.3	46.2	
-76.5	5	-81.5	-24	0	11.7	-35.7	45.8	
-73.5	5	-78.5	-21	0	11.7	-32.7	45.8	
-70.5	5	-75.5	-17.2	0	11.7	-28.9	46.6	
-67.5	5	-72.5	-12.8	0	11.7	-24.5	48	
-64.5	5	-69.5	-11.3	0	11.7	-23	46.5	
-61.5	5	-66.5	-10.6	0	11.7	-22.3	44.2	
-58.5	5	-63.5	-9.5	0	11.7	-21.2	42.3	
-55.5	5	-60.5	-8.4	0	11.7	-20.1	40.4	
-52.5	5	-57.5	-7.3	0	11.7	-19	38.5	
-49.5	5	-54.5	-6.4	0	11.7	-18.1	36.4	
-46.5	5	-51.5	-5.4	0	11.7	-17.1	34.4	
-43.5	5	-48.5	-4.4	0	11.7	-16.1	32.4	
-40.5	5	-45.5	-3.5	0	11.7	-15.2	30.3	
-37.5	5	-42.5	-2.6	0	11.7	-14.3	28.2	
-34.5	5	-39.5	-1.8	0	11.7	-13.5	26	
-31.5	5	-36.5	-1	0	11.7	-12.7	23.8	
-28.5	5	-33.5	-0.2	0	11.7	-11.9	21.6	

MTS2000_C Modified Using Signal Generator

7/19/02

Desired Signal			Undesired Signal					
At Generator		At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-115.6	5	-120.6	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-112.6	5	-117.6	-33.1	0	11.7	-44.8	72.8	
-109.6	5	-114.6	-30.5	0	11.7	-42.2	72.4	
-106.6	5	-111.6	-28.6	0	11.7	-40.3	71.3	
-103.6	5	-108.6	-27.2	0	11.7	-38.9	69.7	
-100.6	5	-105.6	-25.9	0	11.7	-37.6	68	
-97.6	5	-102.6	-24.7	0	11.7	-36.4	66.2	
-94.6	5	-99.6	-23.6	0	11.7	-35.3	64.3	
-91.6	5	-96.6	-22.5	0	11.7	-34.2	62.4	
-88.6	5	-93.6	-21.4	0	11.7	-33.1	60.5	
-85.6	5	-90.6	-20.4	0	11.7	-32.1	58.5	
-82.6	5	-87.6	-19.4	0	11.7	-31.1	56.5	
-79.6	5	-84.6	-18.4	0	11.7	-30.1	54.5	
-76.6	5	-81.6	-17.3	0	11.7	-29	52.6	
-73.6	5	-78.6	-16.3	0	11.7	-28	50.6	
-70.6	5	-75.6	-15.3	0	11.7	-27	48.6	
-67.6	5	-72.6	-14.3	0	11.7	-26	46.6	
-64.6	5	-69.6	-13.2	0	11.7	-24.9	44.7	
-61.6	5	-66.6	-12.2	0	11.7	-23.9	42.7	
-58.6	5	-63.6	-11.2	0	11.7	-22.9	40.7	
-55.6	5	-60.6	-10.1	0	11.7	-21.8	38.8	
-52.6	5	-57.6	-9.1	0	11.7	-20.8	36.8	
-49.6	5	-54.6	-8	0	11.7	-19.7	34.9	
-46.6	5	-51.6	-6.8	0	11.7	-18.5	33.1	
-43.6	5	-48.6	-5.4	0	11.7	-17.1	31.5	
-40.6	5	-45.6	-3.8	0	11.7	-15.5	30.1	
-37.6	5	-42.6	-1.4	0	11.7	-13.1	29.5	
-34.6	5	-39.6	0.2	0	11.7	-11.5	28.1	

MTS2000 C Modified Using iDEN BRs

PA	Variable Att	High Power Att	Loss	At Receiver
37	50	28	12.1	-53.1

7/19/02

Desired Signal			Undesired Signal					
At Generator	Loss	At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-116.1	5	-121.1	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-113.4	5	-118.4	37	50	40.1	-53.1	65.3	
-111.8	5	-116.8	37	47	40.1	-50.1	66.7	
-109.8	5	-114.8	37	44	40.1	-47.1	67.7	
-109	5	-114	37	43	40.1	-46.1	67.9	
-108.2	5	-113.2	37	42	40.1	-45.1	68.1	
-107	5	-112	37	41	40.1	-44.1	67.9	
-106	5	-111	37	40	40.1	-43.1	67.9	
-105	5	-110	37	39	40.1	-42.1	67.9	
-103.8	5	-108.8	37	38	40.1	-41.1	67.7	
-102.4	5	-107.4	37	37	40.1	-40.1	67.3	
-100.7	5	-105.7	37	36	40.1	-39.1	66.6	-98.5 signal degraded but not able to stabilize
-98.8	5	-103.8	37	35	40.1	-38.1	65.7	
-96.8	5	-101.8	37	34	40.1	-37.1	64.7	
-94.4	5	-99.4	37	33	40.1	-36.1	63.3	
-91.8	5	-96.8	37	32	40.1	-35.1	61.7	
-89.1	5	-94.1	37	31	40.1	-34.1	60	
-86.3	5	-91.3	37	30	40.1	-33.1	58.2	
-78.3	5	-83.3	37	27	40.1	-30.1	53.2	
-69.6	5	-74.6	37	24	40.1	-27.1	47.5	
-60.7	5	-65.7	37	21	40.1	-24.1	41.6	
-52.9	5	-57.9	37	18	40.1	-21.1	36.8	
-46.5	5	-51.5	37	15	40.1	-18.1	33.4	
-41.5	5	-46.5	37	12	40.1	-15.1	31.4	
-37.5	5	-42.5	37	9	40.1	-12.1	30.4	
-32.7	5	-37.7	37	6	40.1	-9.1	28.6	
-25.8	5	-30.8	37	3	40.1	-6.1	24.7	
-19.6	5	-24.6	37	0	40.1	-3.1	21.5	

MTS2000_D Modified (D Modification) Using iDEN BRs

PA	Variable Att	High Power Att	Loss	At Receiver
37	50	28	12.1	-53.1

7/19/02

Desired Signal			Undesired Signal					
At Generator	Loss	At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-115.6	5	-120.6	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-113.4	5	-118.4	37	50	40.1	-53.1	65.3	
-112	5	-117	37	47	40.1	-50.1	66.9	
-109.8	5	-114.8	37	44	40.1	-47.1	67.7	
-109	5	-114	37	43	40.1	-46.1	67.9	
-108	5	-113	37	42	40.1	-45.1	67.9	
-107.1	5	-112.1	37	41	40.1	-44.1	68	
-105.9	5	-110.9	37	40	40.1	-43.1	67.8	
-104.8	5	-109.8	37	39	40.1	-42.1	67.7	
-103	5	-108	37	38	40.1	-41.1	66.9	
-101.7	5	-106.7	37	37	40.1	-40.1	66.6	
-99.9	5	-104.9	37	36	40.1	-39.1	65.8	
-97.6	5	-102.6	37	35	40.1	-38.1	64.5	
-95.5	5	-100.5	37	34	40.1	-37.1	63.4	
-92.6	5	-97.6	37	33	40.1	-36.1	61.5	
-90.2	5	-95.2	37	32	40.1	-35.1	60.1	
-87.1	5	-92.1	37	31	40.1	-34.1	58	
-84.5	5	-89.5	37	30	40.1	-33.1	56.4	
-76.3	5	-81.3	37	27	40.1	-30.1	51.2	
-67.7	5	-72.7	37	24	40.1	-27.1	45.6	
-59	5	-64	37	21	40.1	-24.1	39.9	
-50.9	5	-55.9	37	18	40.1	-21.1	34.8	
-44	5	-49	37	15	40.1	-18.1	30.9	
-39.1	5	-44.1	37	12	40.1	-15.1	29	
-33.7	5	-38.7	37	9	40.1	-12.1	26.6	
-22.5	5	-27.5	37	6	40.1	-9.1	18.4	
-17.9	5	-22.9	37	3	40.1	-6.1	16.8	
-15.4	5	-20.4	37	0	40.1	-3.1	17.3	

MTS2000_D Modified (D Modification) Using Signal Generator

PA	Variable Att	High Power Att	Loss	At Receiver
37	50	28	12.1	-53.1

7/19/02

Desired Signal			Undesired Signal					
At Generator	Loss	At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-115.7	5	-120.7	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-112.7	5	-117.7	-31.2	0	11.7	-42.9	74.8	
-109.7	5	-114.7	-29.5	0	11.7	-41.2	73.5	
-106.7	5	-111.7	-28.3	0	11.7	-40	71.7	
-103.7	5	-108.7	-27.2	0	11.7	-38.9	69.8	
-100.7	5	-105.7	-26.1	0	11.7	-37.8	67.9	
-97.7	5	-102.7	-25.1	0	11.7	-36.8	65.9	
-94.7	5	-99.7	-24.1	0	11.7	-35.8	63.9	
-91.7	5	-96.7	-23.1	0	11.7	-34.8	61.9	
-88.7	5	-93.7	-22.1	0	11.7	-33.8	59.9	
-85.7	5	-90.7	-21.1	0	11.7	-32.8	57.9	
-82.7	5	-87.7	-20.1	0	11.7	-31.8	55.9	
-79.7	5	-84.7	-19	0	11.7	-30.7	54	
-76.7	5	-81.7	-18.1	0	11.7	-29.8	51.9	
-73.7	5	-78.7	-17.1	0	11.7	-28.8	49.9	
-70.7	5	-75.7	-16.1	0	11.7	-27.8	47.9	
-67.7	5	-72.7	-15.1	0	11.7	-26.8	45.9	
-64.7	5	-69.7	-14.1	0	11.7	-25.8	43.9	
-61.7	5	-66.7	-13	0	11.7	-24.7	42	
-58.7	5	-63.7	-12	0	11.7	-23.7	40	
-55.7	5	-60.7	-10.9	0	11.7	-22.6	38.1	
-52.7	5	-57.7	-9.9	0	11.7	-21.6	36.1	
-49.7	5	-54.7	-8.8	0	11.7	-20.5	34.2	
-46.7	5	-51.7	-7.7	0	11.7	-19.4	32.3	
-43.7	5	-48.7	-6.5	0	11.7	-18.2	30.5	
-40.7	5	-45.7	-5.2	0	11.7	-16.9	28.8	
-37.7	5	-42.7	-3.6	0	11.7	-15.3	27.4	
-34.7	5	-39.7	-1.5	0	11.7	-13.2	26.5	
-31.7	5	-36.7	4.3	0	11.7	-7.4	29.3	

MTS2000_D Modified (C & D modification) Using Signal Generator

PA	Variable Att	High Power Att	Loss	At Receiver
37	50	28	12.1	-53.1

7/19/02

Desired Signal			Undesired Signal					
At Generator	Loss	At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-115.6	5	-120.6	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-112.6	5	-117.6	-31.3	0	11.7	-43	74.6	
-109.6	5	-114.6	-29.5	0	11.7	-41.2	73.4	
-106.6	5	-111.6	-28.4	0	11.7	-40.1	71.5	
-103.6	5	-108.6	-27.2	0	11.7	-38.9	69.7	
-100.6	5	-105.6	-26.1	0	11.7	-37.8	67.8	
-97.6	5	-102.6	-25.1	0	11.7	-36.8	65.8	
-94.6	5	-99.6	-24.1	0	11.7	-35.8	63.8	
-91.6	5	-96.6	-23.2	0	11.7	-34.9	61.7	
-88.6	5	-93.6	-22.1	0	11.7	-33.8	59.8	
-85.6	5	-90.6	-21.2	0	11.7	-32.9	57.7	
-82.6	5	-87.6	-20.2	0	11.7	-31.9	55.7	
-79.6	5	-84.6	-19.1	0	11.7	-30.8	53.8	
-76.6	5	-81.6	-18.2	0	11.7	-29.9	51.7	
-73.6	5	-78.6	-17.2	0	11.7	-28.9	49.7	
-70.6	5	-75.6	-16.2	0	11.7	-27.9	47.7	
-67.6	5	-72.6	-15.1	0	11.7	-26.8	45.8	
-64.6	5	-69.6	-14.1	0	11.7	-25.8	43.8	
-61.6	5	-66.6	-13.1	0	11.7	-24.8	41.8	
-58.6	5	-63.6	-12.1	0	11.7	-23.8	39.8	
-55.6	5	-60.6	-11	0	11.7	-22.7	37.9	
-52.6	5	-57.6	-10	0	11.7	-21.7	35.9	
-49.6	5	-54.6	-8.9	0	11.7	-20.6	34	
-46.6	5	-51.6	-7.8	0	11.7	-19.5	32.1	
-43.6	5	-48.6	-6.6	0	11.7	-18.3	30.3	
-40.6	5	-45.6	-5.4	0	11.7	-17.1	28.5	
-37.6	5	-42.6	-3.9	0	11.7	-15.6	27	
-34.6	5	-39.6	-2.3	0	11.7	-14	25.6	
-31.6	5	-36.6	-0.8	0	11.7	-12.5	24.1	

MTS2000_D Modified (C & D Mod) Using iDEN BRs

PA	Variable Att	High Power Att	Loss	At Receiver
37	50	28	12.1	-53.1

7/19/02

Desired Signal			Undesired Signal					
At Generator	Loss	At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-115.4	5	-120.4	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-113	5	-118	37	50	40.1	-53.1	64.9	
-111.5	5	-116.5	37	47	40.1	-50.1	66.4	
-109.5	5	-114.5	37	44	40.1	-47.1	67.4	
-108.4	5	-113.4	37	43	40.1	-46.1	67.3	
-107.6	5	-112.6	37	42	40.1	-45.1	67.5	
-106.7	5	-111.7	37	41	40.1	-44.1	67.6	
-105.7	5	-110.7	37	40	40.1	-43.1	67.6	
-104.2	5	-109.2	37	39	40.1	-42.1	67.1	
-102.9	5	-107.9	37	38	40.1	-41.1	66.8	
-101.5	5	-106.5	37	37	40.1	-40.1	66.4	
-99.6	5	-104.6	37	36	40.1	-39.1	65.5	
-97.6	5	-102.6	37	35	40.1	-38.1	64.5	
-95.1	5	-100.1	37	34	40.1	-37.1	63	
-92.7	5	-97.7	37	33	40.1	-36.1	61.6	
-90.1	5	-95.1	37	32	40.1	-35.1	60	
-87.3	5	-92.3	37	31	40.1	-34.1	58.2	
-84.6	5	-89.6	37	30	40.1	-33.1	56.5	
-76.7	5	-81.7	37	27	40.1	-30.1	51.6	
-67.8	5	-72.8	37	24	40.1	-27.1	45.7	
-59.1	5	-64.1	37	21	40.1	-24.1	40	
-51.1	5	-56.1	37	18	40.1	-21.1	35	
-43.8	5	-48.8	37	15	40.1	-18.1	30.7	
-36.9	5	-41.9	37	12	40.1	-15.1	26.8	
-30.5	5	-35.5	37	9	40.1	-12.1	23.4	
-26.1	5	-31.1	37	6	40.1	-9.1	22	
-22.3	5	-27.3	37	3	40.1	-6.1	21.2	
-18.2	5	-23.2	37	0	40.1	-3.1	20.1	

MTS2000_D Modified (C & D modification) Using Signal Generator and TIA/EIA-603-A IM Rej Test

PA	Variable Att	High Power Att	Loss	At Receiver
37	50	28	12.1	-53.1

7/19/02

Desired Signal			Undesired Signal					
At Generator	Loss	At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-115.3	5	-120.3	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-112.3	5	-117.3	-31	0	11.7	-42.7	74.6	
-109.3	5	-114.3	-28.6	0	11.7	-40.3	74	
-106.3	5	-111.3	-27.1	0	11.7	-38.8	72.5	
-103.3	5	-108.3	-28.5	0	11.7	-40.2	68.1	
-100.3	5	-105.3	-24.6	0	11.7	-36.3	69	
-97.3	5	-102.3	-23.5	0	11.7	-35.2	67.1	
-94.3	5	-99.3	-22.4	0	11.7	-34.1	65.2	
-91.3	5	-96.3	-21.4	0	11.7	-33.1	63.2	
-88.3	5	-93.3	-20.4	0	11.7	-32.1	61.2	
-85.3	5	-90.3	-19.4	0	11.7	-31.1	59.2	
-82.3	5	-87.3	-18.4	0	11.7	-30.1	57.2	
-79.3	5	-84.3	-17.4	0	11.7	-29.1	55.2	
-76.3	5	-81.3	-16.4	0	11.7	-28.1	53.2	
-73.3	5	-78.3	-15.4	0	11.7	-27.1	51.2	
-70.3	5	-75.3	-14.4	0	11.7	-26.1	49.2	
-67.3	5	-72.3	-13.3	0	11.7	-25	47.3	
-64.3	5	-69.3	-12.4	0	11.7	-24.1	45.2	
-61.3	5	-66.3	-11.4	0	11.7	-23.1	43.2	
-58.3	5	-63.3	-10.3	0	11.7	-22	41.3	
-55.3	5	-60.3	-9.3	0	11.7	-21	39.3	
-52.3	5	-57.3	-8.3	0	11.7	-20	37.3	
-49.3	5	-54.3	-7.3	0	11.7	-19	35.3	
-46.3	5	-51.3	-6.1	0	11.7	-17.8	33.5	
-43.3	5	-48.3	-5	0	11.7	-16.7	31.6	
-40.3	5	-45.3	-3.8	0	11.7	-15.5	29.8	
-37.3	5	-42.3	-2.4	0	11.7	-14.1	28.2	
-34.3	5	-39.3	-0.7	0	11.7	-12.4	26.9	
-31.3	5	-36.3	1.1	0	11.7	-10.6	25.7	

This is the Calculated Base Line Using MTS-2000 Spec's.
Using Reference Sensitivity of -118 and 72 db IM

8/9/02

Desired Signal			Undesired Signal					
At Generator	Loss	At Receiver	At Generator	Attenuator Setting	Additional Loss	At Receiver	IM Rej	Notes
-118	0	-118	N/A	N/A	N/A	N/A	N/A	Reference sensitivity
-115	0	-115	-43	0	0	-43	72	
-112	0	-112	-42	0	0	-42	70	
-109	0	-109	-41	0	0	-41	68	
-106	0	-106	-40	0	0	-40	66	
-103	0	-103	-39	0	0	-39	64	
-100	0	-100	-38	0	0	-38	62	
-97	0	-97	-37	0	0	-37	60	
-94	0	-94	-36	0	0	-36	58	
-91	0	-91	-35	0	0	-35	56	
-88	0	-88	-34	0	0	-34	54	
-85	0	-85	-33	0	0	-33	52	
-82	0	-82	-32	0	0	-32	50	
-79	0	-79	-31	0	0	-31	48	
-76	0	-76	-30	0	0	-30	46	
-73	0	-73	-29	0	0	-29	44	
-70	0	-70	-28	0	0	-28	42	
-67	0	-67	-27	0	0	-27	40	
-64	0	-64	-26	0	0	-26	38	
-61	0	-61	-25	0	0	-25	36	
-58	0	-58	-24	0	0	-24	34	
-55	0	-55	-23	0	0	-23	32	
-52	0	-52	-22	0	0	-22	30	
-49	0	-49	-21	0	0	-21	28	
-46	0	-46	-20	0	0	-20	26	
-43	0	-43	-19	0	0	-19	24	
-40	0	-40	-18	0	0	-18	22	
-37	0	-37	-17	0	0	-17	20	
-34	0	-34	-16	0	0	-16	18	
-31	0	-31	-15	0	0	-15	16	
-28	0	-28	-14	0	0	-14	14	
-25	0	-25	-13	0	0	-13	12	
-22	0	-22	-12	0	0	-12	10	
-19	0	-19	-11	0	0	-11	8	
-16	0	-16	-10	0	0	-10	6	